DOCUMENT RESUME

ED 454 228 SP 040 109

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TITLE	Teacher Supply in Hong Kong: Educational Qualifications and Growth.
PUB DATE	2001-03-00
NOTE	10p.; Paper presented at the Annual Meeting of the Comparative and International Education Society (Washington, DC, March 14-17, 2001).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Beginning Teachers; Foreign Countries; Higher Education; Labor Turnover; Preservice Teacher Education; Professional Training; Secondary Education; *Secondary School Teachers; Teacher Certification; Teacher Competencies; *Teacher Persistence; Teacher Placement; *Teacher Qualifications; *Teacher Supply and Demand
IDENTIFIERS	*Hong Kong; Out of Field Teacher Assignment

ABSTRACT

This paper explores Hong Kong secondary teacher supply patterns related to teacher retention using data collected from 1991-99. Secondary teachers are classified into five categories by initial educational qualifications: registered Graduate Master (trained GM), who are university graduates with majors in a subject discipline; permitted Graduate Master (untrained GM), who are university graduates with no preservice teacher training; Certificate Master, who are teachers trained through a sub-degree teacher training program (sub-degree CM); Bachelor of Education trained teachers (B.Ed trained GM); and untrained and non-degree teachers permitted to teach under special circumstances. The 2,068 participating teachers, who began teaching in 1991, were followed over the years. About half of the teachers were females, 66 percent were untrained GM teachers, and 61 percent were teaching within their major or minor field. By 1999, only 1,139 were still teaching. Retention was influenced by type of initial training, major teaching area, whether major teaching area matched with subject of study, participation in on-the-job training within the first 3 years, and promotion within 6 years. Sub-degree trained CM teachers and trained GM teachers had a much greater probability of retention. Teacher promotion was significantly and positively positively related to teacher retention. (SM)

Teacher Supply in Hong Kong: Educational Qualifications and Growth

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Paper to be presented at the 2001 Comparative and International Education Society (CIES) Annual Conference held in Washington, D.C., March 14-17, 2001

Introduction

In the past two decades, Hong Kong school education has undergone rapid changes affecting teacher demand and supply directly and indirectly. These changes include (1) fluctuations in total enrolment due to changes in the birth rate and transition of the population structure, immigration and emigration; (2) provision and enrolment policies of compulsory and post-compulsory education; (3) policy-driven decline in pupil-teacher ratio; and (4) leaving/"wastage" rate of the incumbent teachers.

Recent education reform initiated by the Education Commission of the Hong Kong SAR Government has revealed the importance of quality teacher for the success of the reform. In his first policy address in 1997, the Chief Executive emphasized the importance of teacher quality and laid down the policy objective of requiring all new teachers to have a degree and formal training in the near future. There are various initiatives in up-grading the educational qualifications of school teachers. However, the supply of quality teacher may not always catch up with the demand. The supply is largely affected by two crucial factors: (1) the "barrier" set for the entering teachers, i.e. the definition of "qualified teacher"; and (2) the relative attractiveness of the teaching career, including pecuniary and non-pecuniary rewards.

One example of difficulties in the supply of quality teachers in Hong Kong is the shortage of "qualified" teachers for the English Language. There was a continuous growth in the total demand of English Language teachers in both primary school and secondary school in the years from 1997 to 1999. It grew by 200-300 a year. Besides, there were a large number of English Language teachers leaving because of "wastage". It amounted to about 500 a year. But the supply of "qualified teacher", as laid down in the 1997 policy objective, through training by the local teacher education institutions was less than two hundred a year during the same period.

In order to cop with the shortfall in the supply of English Language teacher, various strategies are used in Hong Kong schools. These strategies include (1) assign out-of-field teaching, requesting teachers of other subjects to take up part of the teaching for the English Language; (2) lower the "barrier" for recruitment, permitting teachers without a university degree or without formal teacher training to teach the subject; (3) promote English Language teacher at a faster rate in a single salary schedule, indirectly increasing the pecuniary rewards for these teachers; (4) import English Language teachers from the English-speaking countries under the NET-scheme. There is an urgent need to retain the incumbent teachers as an indirect measure in increasing the supply.

This paper tries to explore the pattern of teacher supply from the perspective of teacher retention. The analysis is based on a "re-constituted" longitudinal data set of teachers from 1991 to 1999. The cohort of 2 068 teachers entering the teaching profession at secondary schools in 1991 are identified and traced through their career development. Table 1 shows the retention pattern of this cohort of teachers. Logistic regression is applied to estimate the probability of their staying on in the profession. The effects of initial educational qualification, matched field of teaching, on-job-training and promotion are examined.

The Supply of Teachers with Different Educational Qualifications

Secondary school teachers in Hong Kong can be classified into five different categories according to their initial educational qualifications. The supply of each category of teachers depends very much on the provision of the training opportunity and the ability to recruit capable students into the respective program.

The first category is the registered "Graduate Master" (i.e. trained-GM). They are university graduates with a major of study in a subject discipline, such as a B.Sc. in Chemistry or a B.A. in History. They then proceed onto the one-year full-time program, the Post-graduate Diploma in Education (PGDE), for their pre-service teacher training. The provision of the full-time pre-service PGDE places has been very limited, with less than 500 a year. Therefore the supply of this category of teacher is also rather limited.

The second category is the permitted "Graduate Master" (untrained-GM). They are university graduates without any pre-service teacher training. They are "permitted" to teach only. Their salary will be "barred" at a certain point if they do not seek in-service training through the part-time PGDE program after entering the teaching profession. When they successfully complete the PGDE program, they will become the registered-GM teachers like those in the first category. The majority of the present secondary school teachers are in this category. Any graduate from local universities can become a permitted untrained-GM teacher and seek in-service training afterwards. Therefore, the supply of this category of teacher is basically "unlimited", depending on the job market for university graduates in the general economy. The flexibility in the supply of this category of teachers has provided a convenient "buffer" to absorb basically any fluctuations in the demand for school teachers. However, it is also this category of teachers that suffers from the highest "wastage" rate.

The third category is the "Certificate Master" teachers trained through a sub-degree teacher training program, roughly equivalent to the Associate Degree program of the North America. These are the "sub-degree trained CM" teachers. The provision of the training program is closely monitored by the Government and the employment of the graduates is largely guaranteed. Presently, nearly all teachers in the primary schools and about one-third of the teachers in the secondary schools belong to this category of teachers. With the rapid expansion in local university education in the early 1990s, this sub-degree teacher training program is losing its attractiveness and is facing difficulties in recruiting "good" students to varying degrees.

The fourth category is the Bachelor of Education trained teachers (B.Ed. trained-GM). The B.Ed. program recruits and trains secondary school graduates who would like to become a school teacher. Students in this program do not have a "major" in a subject discipline. They can elect a "minor" in a discipline of study, such as Mathematics, if the B.Ed. program is offered in a comprehensive university. Since the B.Ed. program is basically a new degree program for local universities, the supply of teacher through this program is rather limited. However, a large number of British and Australian universities have been coming to Hong Kong to offer various types of "off-shore" part-time B.Ed. programs to the CM teachers since the mid-1980s. The B.Ed. educational qualification helps these CM teachers to up-grade to the GM (graduate master) status, and thus to a higher salary schedule. The supply of this category of trained teachers is increasing steadily over the years. However, the quality of such educational qualification has become a major concern.

The final category is the un-trained and non-degree teacher permitted to teach under special circumstances. Though they are classified as such, some of them may

have a university degree or some kind of teacher training that are not recognized by local employers and schools. They are usually paid at a lower salary scale and are prone to leave.

Major Findings

1. Table 2 (column 1) shows the general characteristics the cohort of new entrant secondary school teachers in the year 1991. This group of teachers can be traced through the years 1991 to 1999 with a longitudinal data set constituted from the yearly teacher surveys. About 55% of this group of teachers are females, 66% are untrained-GM (possibly fresh university graduates of the year), 28% are teachers for the English Language, and only about 61% of them are teaching school subjects matched with their major or minor field of study. Table 1 also shows that the retention of this group of teachers drops to less than 60% within the first three years.
2. By the year 1999, only 1139 of the original 2068 new entrants in 1991 are still teaching in schools. The retaining rate after nine years is about 55%.
3. Table 3 shows the results of the logistic regression for this 1991 cohort of new entrants of secondary school teachers. The odds ratio in the last column estimates the probability of retention of this group of teachers after nine years in the field. There is no significant difference in retention between the male and female teachers. However, the type of initial training, major teaching subject, whether major teaching subject matched with subject of study (i.e. out-of-field teaching assignment), participation in on-job-training within first 3 years, and promotion within first 6 years have significant effects on the probability of teacher retention.
4. With reference to the "non-degree and untrained", the "sub-degree trained-CM" teachers and the "trained-GM" teachers have significant and much greater probability of retention (with odds ratio at 2.99 and 2.04, respectively). That is, initial pre-service training has positive effects on retaining teachers in the field. The "B.Ed. trained-GM" teachers have a slightly greater probability only (odds ratio: 1.21). They are even less likely to stay on than the "untrained-GM" teachers (odds ratio: 1.30).
5. With reference to teachers of other subjects (such as history, geography and social studies), teachers of Chinese language, Mathematics and science are more likely to retain (odds ratio: 1.99 and 1.45). However, teachers of the English Language are less likely to retain (odds ratio: 0.698). One possible explanation is that teachers of English Language are facing greater "opportunity costs" than teachers of other subject in staying on, particular when the general economy is in great demand and pay higher wages for people with high English ability.
6. With reference to teachers having "out-of-field" teaching assignment, teachers with their major teaching subject matched with their major or minor subject of study are more likely to retain. That is, while out-of-field teaching assignment is a common strategy in dealing with shortage of teacher for a specific field, it is a "double-blade" sword. It will also lead to a greater possibility of teacher wastage in the long run.

7. Participation in on-job-training within the first 3 years is the most effective way in retaining teacher in the long run (odds ratio: 6.36). This should be largely the result of the "untrained-GM" teachers taking the part-time in-service PGDE study to up-grade themselves to the "trained-GM" status, thus releasing the salary bar imposed on the untrained GM. Therefore, the provision of in-service PGDE program is a crucial strategy in retaining teachers and relieving the pressure of teacher shortage.
8. Since Hong Kong has a uniform and single salary schedule for most of the teachers across all types of schools subsidized by the Government, it is very difficult to raise or lower teachers' wage according to the demand and supply of teachers in the labor market. Promotion and its rate are ways to increasing salary indirectly for a particular group of teachers in high demand. This study also shows clearly that promotion has a high positive effect on teacher retention (odds ratio: 2.57).

Concluding Remarks

Teacher shortage is not a "myth" but a hidden problem. The apparent sufficiency in the supply of teachers has a price to pay. Two common and effective ways of increasing the supply of teachers are (1) lowering the definition of "quality teacher" and thus relaxing the entry requirements for new teachers; and (2) out-of-field teaching assignments. However, they are "double-blade" swords. Education quality may have to be compromised. Besides, teacher retention rate would finally be reduced, unless up-grading on-job-training programs are provided and out-of-field teaching are reverted swiftly.

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Table 1: New entrants as secondary school teachers in 1991 in Hong Kong: Retention, Droupout and Re-entrance over the years 1991-1999

	1991			1992			1993			1994			1995			1996			1997			1998			1999			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
(1)	928	1140	2068	685	868	1553	599	720	1319	580	689	1269	558	671	1229	543	667	1210	528	643	1171	520	633	1153	513	626	1139
(2)	928	1140	2068	685	868	1553	571	695	1266	504	617	1121	474	571	1045	449	551	1000	434	525	959	421	507	928	415	494	909
(3)	0	0	0	0	0	0	28	25	53	76	72	148	84	100	184	94	116	210	94	118	212	99	126	225	98	132	230
(4)							28	25	53	48	47	95	8	28	36	10	16	26	0	2	2	5	8	13	-1	6	5
(5)	928	1140	2068	0.74	0.76	0.75	0.65	0.63	0.64	0.63	0.60	0.61	0.60	0.59	0.59	0.59	0.59	0.59	0.57	0.56	0.57	0.56	0.56	0.56	0.55	0.55	0.55
(6)	928	1140	2068	0.74	0.76	0.75	0.62	0.61	0.61	0.54	0.54	0.54	0.51	0.50	0.51	0.48	0.48	0.48	0.47	0.46	0.46	0.45	0.44	0.45	0.45	0.43	0.44

Remarks:
(1) Retain as at the year
(2) Retain through 1991 to the year
(3) Re-enter at the year, cumulatively.
(4) Re-enter at the year.
(5) Retain at the year, as the % of the initial 1991 new entering cohort.
(6) Retain through 1991 to the year, as the % of the initial 1991 new entering cohort.

Source: Teacher Survey, various years of 1991-1999, Education Department, Hong Kong.

Table 2: Mean characteristics of secondary teachers in Hong Kong, the 1991 and the 1999 cohort

	Cohort of 1991 new entrants		Cohort of 1999 new entrants
	As at 1991	As at 1999	As at 1999
Female	0.55	0.546	0.585
Initial training			
yes (trained-GM)	0.057	0.804	0.19
no (untrained-GM)	0.659	0.076	0.612
yes (sub-degree trained CM)	0.194	0.083	0.121
yes (B.Ed. trained-GM)	0.016	0.014	0.063
no (non-degree & untrained)	0.072	0.011	0.014
Major teaching subject			
Chinese Language	0.167	0.201	0.171
English Language	0.28	0.171	0.325
Mathematics and Science	0.258	0.265	0.242
Others	0.294	0.308	0.253
Major teaching subject matching with 1st or 2nd major subjects studied			
Yes	0.615	0.736	0.469
No	0.385	0.264	0.531
On-job-training received within first 3 years (1991-1993)			
Yes	0.16	0.248	N/A
No	0.84	0.752	N/A
Promotion obtained within first 6 years (1991-1996)			
Yes	0.076	0.105	N/A
No	0.924	0.895	N/A
Mean years of experience	0	8.6067	0
N	2068	1139	1242

Table 3: Logistic regression for the 1991 cohort of new secondary teachers to retain in 1999 (with standardized regression coefficients, standard erros, Wald statistics, and odd ratio)

	B	S.E.	Wald	df	Sig	Odds ratio (Exp(B))
Female	-0.0272	0.1056	0.0663	1	0.7968	0.9732
Initial training						
yes (trained-GM)	0.7133	0.2788	6.5464	1	0.0105	2.0408
no (untrained-GM)	0.2596	0.1897	1.873	1	0.1711	1.2964
yes (sub-degree trained CM)	1.0947	0.2164	25.582	1	0.0000	2.9882
yes (B.Ed. trained-GM)	0.1956	0.4127	0.2247	1	0.6355	1.2161
no (non-degree & untrained)						
Major teaching subject (as at 1991)						
Chinese Language	0.6872	0.1522	20.3805	1	0.0000	1.9881
English Language	-0.3591	0.1344	7.1356	1	0.0076	0.6983
Mathematics and Science	0.3697	0.1364	7.3525	1	0.0067	1.4474
Others						
Major teaching subject matching with 1st or 2nd major subjects studied (as at 1991)						
Yes	0.4148	0.106	15.3007	1	0.0001	1.514
No						
On-job-training received within first 3 years (1991-1993)						
Yes	1.8506	0.1683	120.8445	1	0.0000	6.3635
No						
Promotion obtained within first 6 years (1991-1996)						
Yes	0.9435	0.2124	19.7284	1	0.0000	2.569
No						
Constant	-0.8521	0.2065	17.0281	1	0.0000	
N						2082
R^2						0.16

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